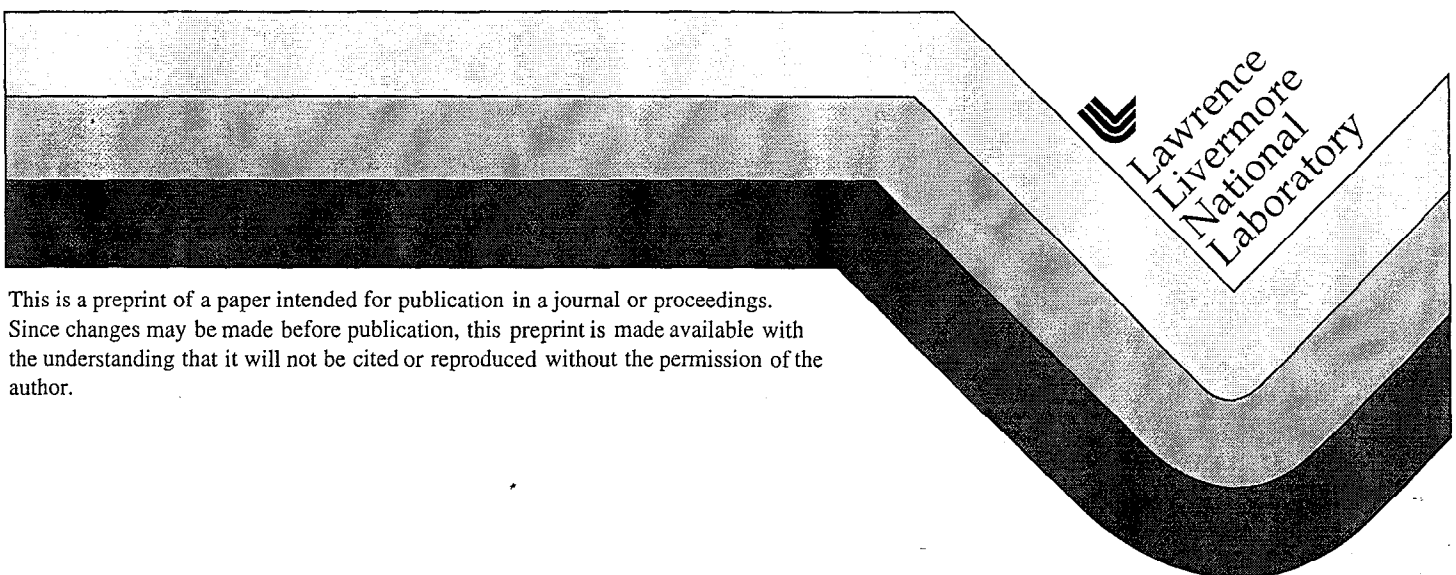


U.S./Russian Cooperative Efforts to Enhance Nuclear MPC&A at VNIITF, (Chelyabinsk-70)

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*U.S./RUSSIAN COOPERATIVE EFFORTS TO ENHANCE NUCLEAR MPC&A AT
VNIITF, (CHELYABINSK-70)*

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The work described here is part of an effort called the Nuclear Materials Protection, Control, and Accounting (MPC&A) Program, a cooperative program between the US Department of Energy (DOE) and Russia's Ministry of Atomic Energy (MinAtom). The objective of the program is to reduce the risk of nuclear proliferation by strengthening MPC&A systems at Russian nuclear facilities. This paper describes that portion of the MPC&A program that is directed specifically to the needs of the All Russian Scientific Research Institute of Technical Physics (VNIITF), also called Chelyabinsk-70. VNIITF is located in the city of Snezhinsk in the Ural mountains, approximately 2000 km east of Moscow and 100 km south of Ekaterinburg.

VNIITF is one of the major sites in the nuclear weapons complex in Russia. The site contains a number of research facilities which use nuclear material as well as assembly, disassembly, and testing of prototypes (pilot samples) of nuclear weapons. VNIITF also has ties to the major nuclear materials production facilities in the Urals region of Russia.

The physical security program at VNIITF was designed at a time when the former Soviet Union emphasized more strict control over individuals. Russia is now in a very different situation, where their diversification activities are resulting in an influx of business and industrial people whose reliability cannot be guaranteed through personnel screening. These changes in addition to the economic difficulties there have caused VNIITF to modify its security systems to apply to this different situation.

VNIITF began modernizing its security system in 1993, at the direction of MinAtom. At that time, a specific program was created with emphasis on MPC&A. People from separate laboratories within VNIITF were brought together to work on the enhanced MPC&A program. The program was approved by MinAtom, however, VNIITF has not received additional funding to implement this program. Lack of funds therefore limited the rate of progress.

During the first two years of the VNIITF MPC&A project, which began in late 1995, emphasis was on the Pulse Research Reactor Facility (PRR),

with some work being done which is applicable at the entire VNIITF site. The PRR contains one metal and two liquid pulse reactors and associated nuclear material storage rooms and a control center. The first tasks were prioritized to form a planned approach beginning with a site characterization study and analysis of the existing system followed by system design and installation. US and Russian personnel shared safeguards and security Vulnerability Assessment (VA) techniques and approaches and obtained some early results by actually applying them to an existing building at VNIITF.

A commissioning of the PRR was held in May of 1998, which included all physical protection systems, including barriers on windows, improved security doors, an alarmed perimeter fence, and alarm center. Several video cameras were added for assessment purposes. Nuclear measurement, and computerized accounting systems were demonstrated. These included integrated barcode and scales systems. Tamper Indicator Device (TID) procedures were also demonstrated.

Vehicle and pedestrian portal monitor technologies were introduced to VNIITF early in the program in an effort to establish an effective method for the detection of unauthorized movement of special nuclear material (SNM). Portals are an important tool used to detect concealed SNM as persons or vehicles pass through facility checkpoints or gates. After the Commissioning VNIITF held a formal demonstration of the improvements for several other Russian nuclear facility representatives.

With the completion of the MPC&A work in the PRR, new physical protection work is focusing on other more sensitive areas. VNIITF identified the remaining buildings for

which MPC&A upgrades will be needed as part of an "Institute-Wide Study of Nuclear Material Protection Control & Accounting Requirements." Special procedures have been developed to assure that the work agreed to is completed without releasing sensitive information to the US side.

VNIITF-wide physical protection initiatives underway include access control and computerized badging systems, and a central MPC&A control system. VNIITF designed an access control both which was subsequently built by a private company in Ekaterinburg. A VNIITF-wide computerized accounting system is also being developed for the large and diverse inventory of nuclear material subject to MPC&A.

A major new initiative being considered is the construction of a new Nuclear Material Storage Building, which if completed, would replace three existing storage buildings. The construction would take place over a period of 2-3 years, with a design and site preparation occurring during the coming year. This building would consolidate nuclear materials in a new structure and enhance the protection of the nuclear material.

Certain tasks at VNIITF are designed to develop the infrastructure and improve the sustainability of the MPC&A program. VNIITF personnel have participated in over twenty MPC&A training classes and workshops. An internal review and assessment program is being developed under an MPC&A contract at VNIITF to allow VNIITF management to have an independent capability to assess their nuclear material protection, control and accounting program.

In conclusion a major MPC&A milestone was met at VNIITF when the

MPC&A improvements were commissioned at the Pulse Research Reactor Facility in May of this year. VNIITF has identified all the facilities for which MPC&A improvements will need to be made and MPC&A work has now started in several of the new more sensitive facilities. The US National Laboratories plan to continue contracting directly with VNIITF to carry out MPC&A improvements and provide support, technical assistance, and equipment as needed to further the objectives of the program. VNIITF has taken the primary responsibility to provide the effort needed to improve their MPC&A system based upon their requirements.

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